



# UNITED STATES PATENT AND TRADEMARK OFFICE

UNITED STATES DEPARTMENT OF COMMERCE  
United States Patent and Trademark Office  
Address: COMMISSIONER FOR PATENTS  
P.O. Box 1450  
Alexandria, Virginia 22313-1450  
[www.uspto.gov](http://www.uspto.gov)

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/702,137	11/04/2003	Joseph Harold Steinmetz	35022.001C2	6841
34395	7590	11/03/2005	EXAMINER	
OLYMPIC PATENT WORKS PLLC P.O. BOX 4277 SEATTLE, WA 98104			CHOI, WOO H	
		ART UNIT		PAPER NUMBER
				2189

DATE MAILED: 11/03/2005

Please find below and/or attached an Office communication concerning this application or proceeding.

<b>Office Action Summary</b>	<b>Application No.</b>	<b>Applicant(s)</b>	
	10/702,137	STEINMETZ ET AL.	
	<b>Examiner</b>	<b>Art Unit</b>	
	Woo H. Choi	2189	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --  
**Period for Reply**

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

#### Status

- 1) Responsive to communication(s) filed on 04 November 2003.
- 2a) This action is FINAL.                    2b) This action is non-final.
- 3) Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

#### Disposition of Claims

- 4) Claim(s) 1-20 is/are pending in the application.
  - 4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.
- 5) Claim(s) \_\_\_\_\_ is/are allowed.
- 6) Claim(s) 1-20 is/are rejected.
- 7) Claim(s) \_\_\_\_\_ is/are objected to.
- 8) Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

#### Application Papers

- 9) The specification is objected to by the Examiner.
- 10) The drawing(s) filed on 04 November 2003 is/are: a) accepted or b) objected to by the Examiner.  
 Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
 Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

#### Priority under 35 U.S.C. § 119

- 12) Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
  - a) All    b) Some \* c) None of:
    1. Certified copies of the priority documents have been received.
    2. Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
    3. Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

\* See the attached detailed Office action for a list of the certified copies not received.

#### Attachment(s)

1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892)	4) <input type="checkbox"/> Interview Summary (PTO-413)
2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948)	Paper No(s)/Mail Date. _____
3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08) Paper No(s)/Mail Date _____.	5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152)
	6) <input type="checkbox"/> Other: _____.

## **DETAILED ACTION**

### ***Claim Objections***

1. Claim 4 is objected to because of the following informalities:

The limitation “virtual routing system of claim 1” should be changed to “virtual disk formatting system.” Appropriate correction is required.

### ***Claim Rejections - 35 USC § 102***

2. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.  
(e) the invention was described in (1) an application for patent, published under section 122(b), by another filed in the United States before the invention by the applicant for patent or (2) a patent granted on an application for patent by another filed in the United States before the invention by the applicant for patent, except that an international application filed under the treaty defined in section 351(a) shall have the effects for purposes of this subsection of an application filed in the United States only if the international application designated the United States and was published under Article 21(2) of such treaty in the English language.

3. Claims 1 2, 4 – 6, 13, 14 and 16 – 18 rejected under 35 U.S.C. 102(b) as being anticipated by Shinohara (US Patent No. 5,742,934).

4. With respect to claims 1 and 13, Shinohara discloses a virtual disk formatting system (figure 1) comprising:

a number of mass-storage devices (4) having physical sectors (figure 2, 4) of a first sector length (col. 3, lines 58 – 60, physical sector length is 528 bytes); and

a routing component (3) that provides a virtual disk interface to the mass-storage components (4) by mapping access operations, received from external entities, directed to a virtual disk (1) having virtual sectors of a second sector length (col 3, lines 60 – 62, logical blocks of size 512) to the number of mass-storage devices.

5. With respect to claims 2 and 14, the routing component is an integrated-circuit storage-shelf router (col. 1, lines 44 – 45).

6. With respect to claims 4 and 16, the routing component includes a processor (figure 1, 6, col. 3, lines 39 – 55) and firmware/software programs that carry out virtual disk formatting.

7. With respect to claims 5, 6, 17 and 18, virtual sectors are mapped onto contiguous physical sectors (figure 2), **allowing** the physical sector and byte address of the first byte of a virtual sector to be calculated, when the second sector length is greater than the first sector length (there is no evidence to suggest that address calculation as claimed is prohibited in Shinohara's disclosure).

8. Claims 7, 8, 10, 19 and 20 are rejected under 35 U.S.C. 102(e) as being anticipated by Kahn *et al.* (US Patent No. 6,952,797, hereinafter "Kahn").

Kahn discloses a virtual disk formatting system (figure 1) comprising:

a number of mass-storage devices (150) having physical sectors of a first sector length (figure 2, 250, the length of the a file block with appended checksum); and  
a routing component (figure 1, 105 – 145) that provides to external entities a first virtual disk interface to the mass-storage components (150) by mapping access operations, received from the external entities (figure 2, 210), directed to the first virtual disk interface having virtual sectors of a second sector length (figure 2, 215) to an internal, virtual disk interface (220) with internal-virtual-disk-sectors having a third sector length larger than the second sector length (225 and 226, 4096+64, additional 64 bytes for error detection/correction are allocated to process the block, the claim does not require that the third “virtual” sector be contiguous), and then mapping the access operations from the internal, virtual disk interface to the number of mass-storage devices (250, 255).

9. Claims 3 and 15 are rejected under 35 U.S.C. 102(e) as being anticipated by Biskup *et al.* (US Patent No. 6,751,757, hereinafter “Biskup”).

Lee discloses a virtual disk formatting system comprising:  
a number of mass-storage devices (figure 4, 302, see also figure 9) having physical sectors of a first sector length (all physical drives have physical sectors of defined length, see also col. 4, lines 8 – 10); and  
a routing component (figure 4, 400) and that provides a virtual disk interface to the mass-storage components by mapping access operations, received from external entities (304), directed to a virtual disk having virtual sectors of a second sector length (figure 3, logical block

or alternatively, clusters, see col. 4, lines col. 4, lines 57 – 67, hosts view these sectors as logical blocks and operating systems view a collection of sectors as a cluster) to the number of mass-storage devices, wherein the routing component is an integrated-circuit storage-shelf router (col. 5, lines 26 – 28), and wherein the storage-shelf router provides a fibre-channel-disk-based virtual disk formatting interface (col. 13, lines 20 – 25) to external entities and maps fibre-channel-disk-based access operations to a number of ATA disk drives included in a storage shelf containing the storage-shelf router.

***Claim Rejections - 35 USC § 103***

10. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

11. Claim 9 is rejected under 35 U.S.C. 103(a) as being unpatentable over Kahn in view of Jackowski *et al.* (US Patent No. 4,809,273, hereinafter “Jackowski”).

Kahn discloses all of the limitations of the parent claim as discussed above. However, Kahn does not specifically disclose that the system uses longitudinal redundancy check code. On the other hand, Jackowski teaches how to implement a CRC code generator/verifier. Jackowski also discloses that a longitudinal redundancy code is a special case of CRC (col. 3, lines 11 – 23).

It would have been obvious to one of ordinary skill in the art, having the teachings of Kahn and Jackowski before him at the time the invention was made, to the CRC generator teaching of Jackowski in the system of Kahn to be able to actually design and implement the checksum calculator/verifier (figure 2, 230 and figure 3, 355) since Kahn discuss checksums in general and does not disclose details of what type of checksums are to be use or how they are calculated and verified.

12. Claims 11 and 12 is rejected under 35 U.S.C. 103(a) as being unpatentable over Biskup in view of Kahn.

Biskup disclose all of the limitations of claim 3 and 15 as discussed above. The main difference between these claims and claim 11 is an interface with internal-virtual-disk sectors having a sector length larger that the second virtual sector length. This additional limitation is taught by Kahn as discussed above in rejection of claim 7.

It would have been obvious to one of ordinary skill in the art, having the teachings of Biskup and Kahn before him at the time the invention was made, to use sector and block checksums teachings of Kahn in the data storage system of Biskup in order to improve the reliability of the data storage system (Kahn, col. 2, lines 20 – 23).

***Conclusion***

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Woo H. Choi whose telephone number is (571) 272-4179. The examiner can normally be reached on M-F, 9:00-5:30.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Matt Kim can be reached on (571) 272-4182. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).



Woo H. Choi  
October 23, 2005